

Chappell (W. F.)

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BY PERMANENT TUBAGE

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Attending Physician to the Chest and Throat Department (out-door), Pres-
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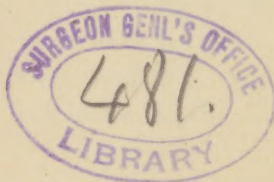
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Stricture of the Œsophagus, however produced, causes so much distress, that any suggestions for its relief, or to benefit the condition of the sufferer, must be acceptable to every practitioner. In every case of organic stricture, we have to decide on the best manner of nourishing and sustaining the patient in the later stages of the disease.

Gastrotomy has been most relied upon to effect this end, but owing to the seriousness of the operation, and the usual weakened condition of the patient when it is performed, the result obtained cannot be considered a success, in fact, the operation itself often proves fatal, and is therefore only resorted to that the patient may escape the horrors of starvation. The use of a short tube for feeding was advocated by Sir Morrell MacKenzie many years ago. In 1884, Dr. Charters Symonds exhibited a short tube before the Clinical Society of London very similar in design and for the same purpose as that recommended by Dr. MacKenzie. This tube was an improvement in shape and manufacture on MacKenzie's, and was intended for permanent retention, while MacKenzie only allowed his to remain in position a few days at the most.

The possibility of keeping the tube in the œsophagus, for from one to six months, as has been reported by several observers, greatly increases its usefulness, until at the present time, most cases of malignant stricture, if seen moderately early, can be so managed as to render gastrotomy unnecessary; indeed, in very advanced cases we can frequently introduce a small tube, and sustain the patient until the disease has progressed to a further degree and implicated some other organ, which terminates life, and spares the patient a gastrotomy or the trials of slow starvation.

When the disease ulcerates through into the trachea, the short tube cannot be retained in the œsophagus. As this condition occurs only very late in the case, the œsophageal opening rarely closes completely, if a short tube has been used, and the patient can be nourished with a long feeding tube for the time which he needs it. The use of the short tube has been confined chiefly to cases of malignant stricture, and has therefore been only palliative in its usefulness, but I have found it of great service as a curative agent in other forms of stricture. In recent and slight cases of traumatic stenosis of the gullet, where we may expect a good result from gentle dilatation, the presence of a short, silk, gum-elastic tube, at the seat of stricture, in the interval between the passing of the bougies, will hasten the restoration of the calibre of the œsophagus. When used for this purpose, we need a set of tubes each a little smaller in diameter than the corresponding bougie to be employed. After passing the bougie into the œsophagus and allowing it to remain ten or fifteen minutes, it is removed, and a suitable short tube introduced and kept in position four or five days until the next sized bougie is passed. This method

of dilatation prevents contraction of the stricture in the interval between the passing of the bougies. We also get the dilating effect of the mere presence of the tube in the stricture. In some cases of nervous or hysterical strictures, it is also of service when they have resisted the continuous passing of the bougie for some time, or have recurred. In one case, I employed a soft rubber tube and allowed it to remain in position two weeks. After its removal, the patient swallowed perfectly for a month, when the attack recurred. The tube was re-introduced and allowed to remain a week, when recovery was complete and remained so. The moral effect of the presence of the tube was no doubt the chief element in recovery.

It seems to me that a similar use of the tube might be made after internal œsophagotomy. After this operation, we rely upon the passing of bougies to maintain the calibre of the tube, and while I have not had an opportunity of testing it, it seems, from our experience with short tubes in gradual dilatation, that we have every reason to expect that an introduction of a silk gum-elastic tube, say four or five days after an internal œsophagotomy, and used in conjunction with the bougies, would be a great assistance to us in restoring the œsophagus to a more normal condition. Of course, better success may be expected, when only a short part of the œsophagus is implicated in the stricture.

A description of the tubes used and the methods of introduction, with suggestions as to the management of the cases, will, I think, be valuable.

The tubes are made of gum-elastic on silk web, or of soft rubber with thickened walls. The former are the most use-

ful, as in fact it is only in a few cases that the soft rubber can be used. The length of the tube varies from four to seven inches, according to the length of the stricture, or if there are two strictures close together, the tube may be long enough to include both. The soft rubber tube rarely requires to be more than four inches long, as it is only applicable to strictures at the upper extremity of the œsophagus, and can easily be introduced and so nicely adjusted in position that a tube of this length is usually quite sufficient. The superior extremity is funnel-shaped and rests on the top of the stricture. The small end is rounded and has an eye about half an inch from the extremity. The bore of the tube is as large as possible, consistent with the strength of the tube, and extends past the eye to the inferior extremity. This allows the whalebone introduced to be carried to the bottom and then easily removed. According to my experience, however, it is just as well, if not better, to have the small end of the tube open, as it is not so likely to get filled with food. A stout silk thread of requisite length is then passed through the tube on either side of the funnel-shaped extremity. The tube is then washed in a carbolic solution and the outside coated with vaseline. The position and size of the stricture have of course been ascertained by bougies.

The œsophagus is disinfected as much as possible by directing the patient to swallow a solution for that purpose ; I then give two or three teaspoonsful of a one per cent. solution of olive oil and cocaine. This not only facilitates the passing of the tube by its lubricating properties, but also shrinks the tissues and increases the calibre of the stricture to a small degree.

When the stricture is at the upper extremity of the œsophagus, the tube can be introduced by simply engaging a bougie in its funnel end ; but when it is further down we have to guard against the tube coiling up during introduction. For this purpose Dr. Symonds recommends a whalebone introducer, which is passed to the bottom of the tube, and outside of this a gum elastic sheath which is engaged in the funnel extremity. The whalebone will keep the tube stiff, and pressure may be made on the sheath from the top of the tube. Plenty of time must be taken and only the gentlest manipulations employed. If the stricture is not too narrow, you can get some assistance by directing the patient to swallow while you exert gentle pressure. The silk thread which is fastened to the tube keeps it under control, and is usually brought out of the mouth and fastened on the cheek. I have found this a very troublesome procedure, as a good deal of mucous always accumulates in the pharynx and mouth, and the presence of a thread in the mouth increases this to such a degree that it is almost unbearable to some patients. To obviate this, I passed a very small soft-rubber catheter through the nose into the mouth and secured the thread to it, and then drew it up through the nose, removed the catheter, and left the thread in one of the nasal passages ; the thread was then fastened to the cheek with plaster. By this means the thread is kept in the back of the pharynx, and well out of the way of the fauces. In two cases in which I employed this method, the patients said they had very little discomfort.

The soft rubber tube is prepared for introduction in the same way as the silk elastic, and when the case is suitable for its employment can be easily introduced with the finger and a

bougie. If the case is progressing favorably under the tube treatment, it is advisable to remove the tube once in two weeks, and after cleaning, re-introduce it. In cases of malignant stricture, it is necessary at first to remove the tube more frequently than this, owing to the dilation which often follows the first introduction.

The following are short histories of a few cases treated with the tubes :—

Mrs. V., age 51, came under my care in June 2d, 1890. She had an excellent family history. Sixteen years before the present illness began she had some difficulty in swallowing solids. The physician who attended her at the time diagnosed it as nervous stricture of the *œsophagus*. He blistered her back and throat and gave her tonics. She did not lose flesh or strength, and after about eighteen months was so much improved that she discontinued the treatment. Since that time, however, and up to the beginning of the present illness, she was obliged to swallow solids with care, as she found they would stick in her throat, and if she drank quickly she choked. Soon after Christmas, 1889, she found the slight difficulty in swallowing was increasing, and two weeks later, it was very pronounced. From this time she rapidly grew worse, and by the 1st of April was reduced to fluid diet. Her voice began to grow hoarse about this time. These symptoms progressed until June 2d, when she came under my observation. I found her much emaciated, pale and haggard in appearance, and she had swallowed nothing for thirty-six hours. Not having a suitable long tube at hand, I tried to pass a No. 7 English gum-elastic catheter, but was not successful. A hypodermic of morphine was then administered and the patient

directed to swallow half a grain of cocaine dissolved in water. In twenty minutes, I passed the catheter without difficulty, and gave her some milk. A few hours later, a tube was introduced and food again given. The following day, I passed a No. 6 bougie and found the stricture was sixteen inches from the upper incisor teeth, which is the usual point from which measurement is made.

From the history, appearance of the patient, and great salivation present, there could be no doubt a malignant growth had to be dealt with.

On the 6th of June, I improvised a short tube by taking sufficient of the upper extremity of a long feeding tube which has a funnel-shaped end, and introduced it at the seat of the stricture. The first day it caused some coughing, but after that she swallowed without difficulty, providing she did so slowly. A week later I removed the tube, and put in a new one which I had had made. This she wore continuously until July 14th, when she began to feel nauseated, and I was obliged to remove the tube. From the 10th of June till the 14th of July she had gained seven pounds in weight, and was much stronger and very comfortable. After the removal of the tube she swallowed liquids, but the vomiting and coughing was so great that she did not retain anything, and a thin, dark-brown, grumous fluid began to appear in the vomit; on the 17th she had a violent chill, followed by fever, the temperature going up to 103 F.; she was delirious and comatose, and died the following day.

On *post mortem* examination, a malignant growth was found in the lower part of the œsophagus. It implicated about four inches of œsophagus and nearly destroyed its walls to that ex-

tent. It had also extended to the trachea and perforated it just above the right bronchus. The neighboring lung tissue on both sides was implicated, and also the walls of the aorta. A carcinomatous mass, about the size of a hen's egg, was found in the walls of the stomach, near the œsophageal opening. It protuded into the cavity of the stomach and was very vascular. Its surface showed signs of erosion and recent hemorrhage. The heart walls were thin and pale, and the pericardium contained two ounces of pus.

Miss C., Age 27, never had any special illness, but was always nervous. Had been in a house during the summer was undergoing repairs, and thought she caught malaria. While eating supper about two weeks befor consulting me, found she was suddenly unable to swallow anything solid; taking liquids also made her choke. When I saw her she was thin, pale, and weak, extremely nervous about her condition, as she was sure she felt a lump rise in her throat and choke her every time she attempted to swallow. After spraying the fauces with cocaine, I passed a No. 10 œsophagus bougie with little effort, and the following day a No. 13, which was about full size for her. Mixed bromides and quinine were prescribed, and the patient told she could now swallow any food she wished. She returned in a week and reported that for a few days after her visit she was all right, but she now felt the lump in her throat and could not swallow. I again passed a full-sized bougie and sent her home, only to have her return ten days later with another attack. These recurrences were repeated several times until she became quite despondent. I then introduced a soft-rubber short-tube, about No. 10 in size, and let it remain for two weeks. During this time she took plenty of

fluids and called to tell me that she was quite sure she could now take solids.

A few days later, I removed the tube and she was able to swallow perfectly for a month, when, after some excitement, the old trouble returned. The tube was again resorted to, and after four days she was quite well and remained so. I have no doubt that in this case, the tube hung free in the œsophagus soon after its introduction, and that the patient swallowed outside of it as well as through it.

I have employed the tube in two other cases, one of hysterical stricture, where it was only a partial success, owing to nausea; the other, a mild traumatic stricture, where it was used as an aid to gradual dilatation with marked success. Not having any notes of these two cases, I am unable to present them in detail.

It seems remarkable in case No. 1, which I have reported, that so large a growth should be found in the stomach without causing any distress or symptoms which would draw attention to its presence. I only discovered it two or three days before death, when the vomiting came on. Up to that time, there had not been the slightest complaint of distress in the stomach. Dr. S. J. Mixter, of Boston, has suggested a new instrument for introducing the short tube. I have not used it, but Dr. Robert F. Weir, who has had considerable experience with it, tells me that he prefers it to any other.

